

REMARKS

This responds to the Office Action dated on January 12, 2006, and the references cited therewith. Reconsideration is respectfully requested.

Claims 1, 2, 4, 6, 7, 12, 14, 15, 16, 20, 21 and 23 are amended, claim 11 is canceled, and no claims are added; as a result, claims 1 – 10 and 12 - 23 are now pending in this application.

Allowable Subject Matter

Claims 7-8, 12-13, 18 and 23 were objected to as being dependent upon a rejected base claim, but were indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 7 has been amended to include the limitations of claim 1 and intervening claims 2, 5, and 6, and is believed to be in condition for allowance. Claim 8 is believed to be in condition for allowance at least because of its dependency on claim 7.

Claim 12 has been amended to include the limitations of claim 11 and is believed to be in condition for allowance. Claim 13 is believed to be in condition for allowance at least because of its dependency on claim 12. Claims 14, 15, 16 and 20 have been amended to depend from claim 12 and are believed to be in condition for allowance at least because of their dependency on claim 12. Claim 17 is believed to be in condition for allowance at least because of its dependency on claim 16. Claims 18 and 19 are believed to be in condition for allowance at least because of their dependency on claim 16.

Claim 23 has been amended to including the limitations of claim 21 and intervening claim 22 and is believed to be in condition for allowance.

§112 Rejection of the Claims

Claim 4 was rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Claim 4 has been amended to recite that the combined signal has a duty cycle of less than the duty cycle of the switching signal, and that the duty cycle of the combined signal is controlled by the control signal. In view of this, Applicants submit that the rejection of claim 4 under 35 U.S.C. § 112, second paragraph, has been overcome.

§102 Rejection of the Claims

Claims 1-6, 11, 14-17, and 20-22 were rejected under 35 U.S.C. § 102(b) as being anticipated by Jiang (EP 0907237).

Applicants' claim 1, as amended, is directed to a power converter with a shared first-side stage and a plurality of second-side converter stages. As recited in claim 1, as amended, each of the second-side converter stages generates an output and control circuitry separately monitors the outputs of the second-side converter stages and generates a control signal for each output. The control signal turns off switching elements of a corresponding one of the second-side converter stage to regulate the output. Claim 1, as amended, also recites that the outputs of the second-side converter stages are individually controlled.

Claim 1, as amended, also recites steering circuitry coupling switching elements of the first-side stage to switching elements of the second side converter stages. As further recited in claim 1, the steering circuitry allows current to flow from the switching elements of the first-side stage to the switching elements of the second-side converter stages and inhibits current from flowing between the switching elements of the second-side converter stages when a switching element of one of the second-side converter stages is turned off before a switching element of one of the other second-side converter stages.

Applicants' claim 20, as amended, recites inhibiting current from flowing between the first low-side stage and one or more other low-side stages when the switching elements of one of the low-side stages is turned off before the other.

Applicants find no teaching, suggestion or motivation in any of the cited references to individually control the outputs of the second-side converter stages. Applicants also find no teaching, suggestion or motivation in any of the cited references of steering circuitry that allows current to flow from the switching elements of the first-side stage to the switching elements of the second-side converter stages and that inhibits current from flowing between the switching elements of the second-side converter stages when a switching element of one of the second-side converter stages is turned off before a switching element of one of the other second-side converter stages.

Jiang on the other hand, does not separately monitor or control the outputs of the second stages. According to the Examiner, Jiang's second stages correspond to output circuits 60, 62

and 66 of Jiang's FIG. 3, which are not separately monitored. Jiang also does not use steering circuitry, as recited in Applicants' claim 1. Referring to FIG. 3 of Jiang, there is no circuitry coupling switching elements of the input stage to switching elements of output stages, and furthermore, current may flow between the switching elements of the output stages (See Jiang FIG. 3, elements TP20, TP21 and TPn, and corresponding elements TS20, TS21 and TSn). Therefore, Jiang also can not inhibit current from flowing between the first low-side stage and one or more other low-side stages when the switching elements of one of the low-side stages is turned off before the other, as recited, for example, in Applicants' amended claim 20.

Applicants' claim 2 further distinguishes over Jiang by reciting that that steering circuitry comprises steering diodes. Jiang does not use diodes that function as steering diodes.

In view of the above discussion, Applicants submit that claim 1 is allowable over Jiang. Applicants further submit that claims 2 – 6, 9 – 10 are also allowable at least because of their dependency on claim 1. Applicants also submit that claim 20 is allowable over Jiang and that claim 21 is also allowable at least because of its dependency on claim 20.

§103 Rejection of the Claims

Claims 9 and 10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Jiang (EP 0907237). Claims 9 and 10, by virtue of their dependency on claim 1, recite steering circuitry coupling switching elements of the first-side stage to switching elements of the second side converter stages. As recited, the switching elements allow current to flow from the switching elements of the first-side stage to the switching elements of the second-side converter stages and inhibit current from flowing between the switching elements of the second-side converter stages when a switching element of one of the second-side converter stages is turned off before a switching element of one of the other second-side converter stages. As discussed above, Applicants find no teaching, suggestion or motivation in Jiang of steering circuitry that operates this way.

Claim 19 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Jiang (EP 0907237) as applied to claims 11, 16, and 17 above, and further in view of Harding et al. (2002/0037796). Harding has been cited by the Examiner to disclosing an optical coupler to isolate control circuitry from an external device to the controller. Applicants submit, however,

that the combination of Jiang and Harding does not result in Applicants' claimed invention as recited in claim 19.

Applicants submit that neither Jiang nor Harding, teach, suggest or motivate the use of steering diodes, as recited in claim 12, coupling the low-side switching elements with the high-side switching elements, wherein the steering diodes allow current to flow from the high-side switching elements to the low-side switching elements and inhibit current from flowing between the sets of low-side switching elements.

In view of the above, Applicants submit that claim 19 is allowable over the cited art and that the rejection of claim 19 under 35 U.S.C. § 103(a) has been overcome.

CONCLUSION

Applicants respectfully submit that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicants' attorney Gregory J. Gorrie at (480) 659-3314 or Applicants' below-named representative at 310-647-3723 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 50-0888.

Respectfully submitted,

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Date

3 / 7 / 04

By

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